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APPENDIX 25

SIGNAL SORTER COMMON DATA BASE

FINAL SOFTWARE REPORT

DATA ITEM NO. A005

INTEGRATED ELECTRONIC WARFARE SYSTEM ADVANCED DEVELOPMENT MODEL (ADM)

PREPARED FOR:

NAVAL AIR DEVELOPMENT CENTER
WARMINSTER, PENNSYLVANIA

CONTRACT N62269-75-C-0070

RAYTHEON
ELECTROMAGNETIC SYSTEMS DIVISION

1 OCTOBER 1977

APPENDIX 25

SIGNAL SORTER COMMON DATA BASE

FINAL SOFTWARE REPORT

DATA ITEM A005

INTEGRATED ELECTRONIC WARFARE SYSTEM (IEWS)
ADVANCED DEVELOPMENT MODEL (ADM)

Contract No. N62269-75-C-0070

Prepared for:

Naval Air Development Center
Warminister, Pennsylvania

Prepared by:

RAYTHEON COMPANY
Electromagnetic Systems Division
6380 Hollister Avenue
Goleta, California 93017

1 OCTOBER 1977

RAYTHEON	RAYTHEON COMPANY LEXINGTON, MASS. 02173	CODE IDENT NO. 49956	SPEC NO. 53959-TC-0765
			SHEET 1 OF / REV

TYPE OF SPEC

Computer Program Design Specification

TITLE OF SPEC

IEWS Signal Sorter Common Data Base

FUNCTION	APPROVED	DATE	FUNCTION	APPROVED	DATE
WRITER	T. Chernesky				

REVISIONS

CHK	DESCRIPTION	REV	CHK	DESCRIPTION	REV

REVISION																					
SHEET NO.																					
REV STATUS OF SHEETS	REVISION																				
	SHEET NO.																				

COMMON DATA BASE DESIGN DOCUMENT

IEWS SIGNAL SORTER SOFTWARE

1.0 SCOPE

This document describes the data base for the IEWS Signal Sorter software.

2.0 APPLICABLE DOCUMENTS

WS-8506	Requirements for Digital Computer Program Documentation, Rev. 1, dated 1 November 1971.
CG-983645	IEWS Signal Sorter Computer Program Performance Specification.
CG-983645	IEWS Signal Sorter Supervisor Software Program Design Specification.
CG-983645	IEWS Signal Sorter NESU Software Program Design Specification.

RP-16 Microprocessor Manual.

3.0 REQUIREMENTS

3.1 TABLES

3.1.1 NESU Emitter File (EMFL)

Purpose and Type - Fixed length of 256 words. Used to maintain NESU CAM and detect and generate new emitter files.

Size and Indexing Procedure - 32 entries of 8 words apiece. Each entry corresponds to a CAM file. The first entry corresponds to the first CAM file, the second entry corresponds to the second CAM file, etc. All entries are referenced relative to the start of the file.

Entry Format:

	15	14	13		0
Word 0	v	n	p		
Word 1	SOQ Pointer				
Word 2	EOQ Pointer				
Word 3	PDW count				
Word 4	Azimuth				
Word 5	Frequency				
Word 6	TOA msb				
Word 7	TOA lsb				

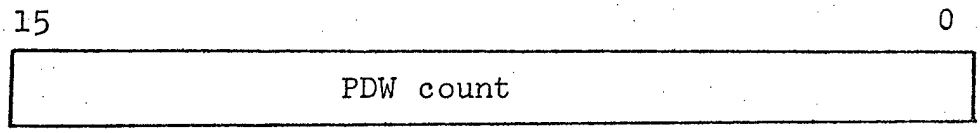
Field		Units	LSB
v	if set, indicates entry is a valid file		
n	if set, indicates entry is a newly generated emitter		
p	if set, indicates entry is to be processed by the next purge cycle		
SOQ pointer	memory address of the first word of the first PDW linked to the entry		
EOQ pointer	memory address of the first word of the last PDW linked to the entry		
PDW count	number of PDW's linked to the entry		1
azimuth	azimuth of emitter. Value from 0 to 63.	cells	1 cell
frequency	frequency of emitter contained in in bits 0-13.	MHz	1.25 Mhz.
TOA	Time of Arrival of last PDW. 20 bits with the 4 msb's right justified in word 6.	μsec	1.0 μsec

3.1.2 NESU AOA FILE (AAFL)

Purpose and Type - Fixed length. Used for detecting frequency agile emitters.

Size and Indexing Procedure - 64 words, each word corresponding to an angle cell. Each word is referenced relative to the start of the file.

Entry Description -



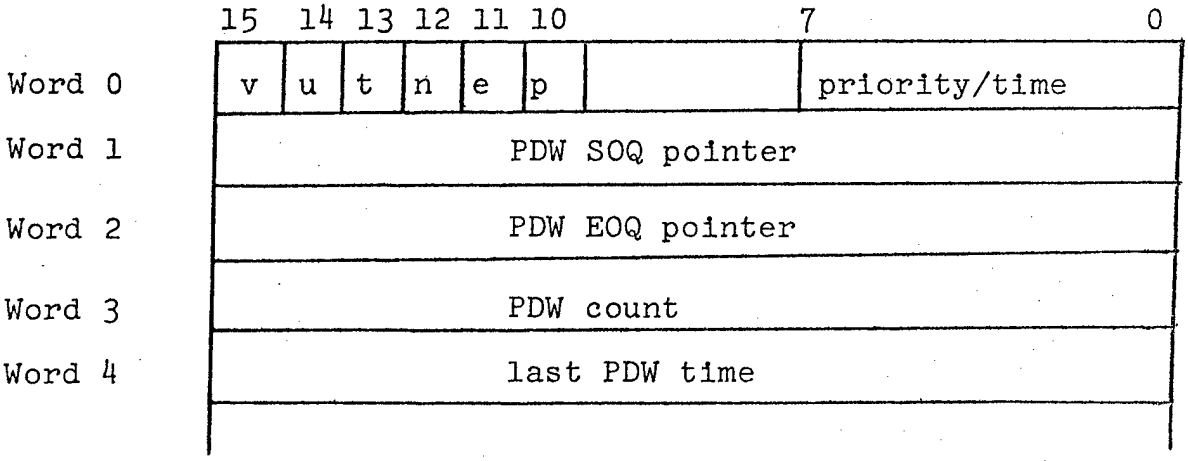
Field		Units	LSB
PDW count	Count of number of PDW's whose azimuth corresponds to this angle cell.		1

3.1.3 SUPERVISOR EMITTER TABLE (EMTB)

Purpose and Type - Fixed length. Used for updating and maintaining the TC Track Data Memory files.

Size and Indexing Procedure - 128 entries of 9 words apiece. Each entry corresponds to one file in the TDM.

Entry Description -



Word 5	New Track PDW pointer
Word 6	throttle file no.
Word 7	update queue entry
Word 8	update queue entry

Field		Units	LSB
v	if set indicates entry is valid		
u	if set indicates corresponding file is being updated		
t	if set indicates corresponding file is being throttled by Input Buffer		
n	if set indicates corresponding file is not to be updated		
e	if set indicates a newly generated track file		
p	if set indicates file to be processed on next time-out cycle		
priority/time	number of seconds between updates	seconds	250ms
PDW SOQ pointer	memory address of the first word of the first PDW block to be used for updating		
PDW EOQ pointer	memory address of the first word of the last update PDW block currently linked		
PDW count	number of update PDW blocks linked to entry		1
last PDW time	The internal time last PDW block was received	seconds	250ms
new track PDW pointer	memory address of the first word of the first block of PDW's used to generate the track file. Contains zero if list has been purged.		

Throttle file no.	File number of the throttle file in the Input Buffer and Throttle Table.		
Update queue entry	Two words used as an entry on the Update Queue. 2nd word contains the file number (0-127)		

3.1.4 SUPERVISOR THROTTLE TABLE

Purpose and Type - fixed length. Used to maintain the Input Buffer CAM.

Size and Indexing Procedure - 8 entries of 2 words apiece. Each entry corresponds to a file in the IB CAM.

Entry Description -

	15 ... 0
Word 0	emitter number
Word 1	throttle count

Field		Units	LSB
Emitter number	Number of TDM file and Emitter table entry		
Throttle count	Count in IB buffer CAM for corresponding file		

3.2 VARIABLES

3.2.1 NESU AOA THRESHOLD (AZTH)

Purpose - contains integer value of PDW count in an AOA fiel entry at which to generate an agile emitter file.

Size - 1 word

Range and Initial Condition - TBD

Changeable by the SC.

Positive integer value with LSB = 1

3.2.2 FREE CORE EOQ POINTER (CEOQ)

Purpose - contains memory address of the first word of the last free core block.

Size - 1 word

Range - 4096 to 20475

Initial value - TBD

Dynamic

3.2.3 FREE CORE SOQ POINTER (CSOQ)

Purpose - contains memory address of the first word of the first free core block

Size - 1 word

Range - 4096 to 20475

Initial Value - TBD

Dynamic

3.2.4 SUPERVISOR EMITTER PURGE TIME (PGTM)

Purpose - contains emitter purge time in seconds.

Size - 1 word

Range - TBD

Initial Condition - 10 seconds

Dynamic

LSB = 250 ms

3.2.5 SYSTEM TIME (TIME)

Purpose - contains current time value.

Size - 1 word

Range - 0 to 8195.75 seconds

Initial Condition - 0

Dynamic

LSB = 250 ms.

3.2.6 NEW TRACK START THRESHOLD (TRTH)

Purpose - contains number of PDW's to be used to generate a new emitter.

Size - 1 word

Range - TBD

Initial Condition - 0

Dynamic

LSB = 1

3.3 CONSTANTS

None

3.4 FLAGS

3.4.1 NESU PDW BUFFER INTERRUPT FLAG (INTR)

Purpose - indicates occurrence of PDW Buffer interrupt if non-zero.

Initial Condition - zero

Size - 1 word

3.4.2 NESU IDLE FLAG (NIDLE)

Purpose - indicates NESU is in idle state if non-zero.

Initial Condition - non-zero

Size - 1 word

3.4.3 NESU PURGE FLAG (PURGE)

Purpose - indicates NESU is to perform a purge cycle if non-zero.

Initial Condition - zero

Size - 1 word

3.4.4 SUPERVISOR IDLE FLAG (SIDLE)

Purpose - indicates Supervisor is in idle state if non-zero.

Initial Condition - non-zero

Size - 1 word

3.5 INDEXES

None

3.6 SUBPROGRAM REFERENCE

Figure 3.1 shows the usage of data base items by the routines.

4.0 NOTES

None

	NESU Core Manager	NESU PDW Buff. Int. Hand.	NESU Initial.	NESU Main Program	Supv. Aux. Functions	Supv. Core Manager	Supv. SC Mess. Hand.	Supv. Init.
Variables								
AZTH	--	--	S	U	--	--	--	--
CEOQ	B	--	--	--	--	B	--	S
CSOQ	B	--	--	--	--	B	--	S
PGTM	--	--	--	--	U	--	S	--
TIME	--	--	--	--	B	--	--	S
TRTH	--	--	S	U	--	--	--	--
Flags								
INTR	--	S	S	U	--	--	--	--
NIDLE	--	--	S	B	--	--	--	--
PURGE	--	--	--	B	S	--	--	S
SIDLE	--	--	--	--	U	--	S	S

FIGURE 1

RAYTHEON COMPANY
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SPEC NO.

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